

Sec 4 Inverse Z-transform

$$* Y(z) = \frac{z(z+1)}{(z-0.3)(z-0.4)(z-1)^2}$$

Req $y(0), y(1), \dots$

Sol

$$Y(z) = \frac{z^2 + z}{z^4 - 2.7z^3 + 2.52z^2 - 0.82z + 0.12}$$

$$z^{-2} + 3.7z^{-3} + 7.48z^{-4}$$

$$z^2 + z$$

$$z^4 - 2.7z^3 + 2.52z^2 - 0.82z + 0.12$$

$$z^{-2} - 2.7z^{-1} + 2.5 - 0.82z^{-1} + 0.12z^{-2}$$

$$-7z^{-1} - 2.5 + 0.82z^{-1} - 0.12z^{-2}$$

$$-3.7z^{-1} - 10 + 9.32z^{-1} - 3.03z^{-2} + 0.44z^{-3}$$

$$7.48 - 8.5z^{-1} + 2.91z^{-2} - 0.44z^{-3}$$

$$y(0) = 0 \quad (y(1) = 0, y(2) = 1)$$

$$y(3) = 3.7 \quad , \quad y(4) = 7.48$$

* using Partial Fraction

$$Y(z) = Z \left[\frac{A_1}{z-0.3} + \frac{A_2}{z-0.4} + \frac{A_3}{(z-1)^2} + \frac{A_4}{(z-1)} \right]$$

~~A₄~~

اصناف معروفه صواب
ملناش د عرود بال z.

→ To which use obtain P.F.

$$Y(z) = Z \left[\frac{-26.53}{z-0.3} + \frac{38.88}{z-0.4} + \frac{4.76}{(z-1)^2} - \frac{12.34}{(z-1)} \right]$$

$$= - \frac{26.53 z}{z-0.3} + \frac{38.88 z}{z-0.4} + \frac{4.76 z}{(z-1)^2} - \frac{12.34 z}{(z-1)}$$

$y(n) =$

$$= -26.53 (0.3)^n + 38.88 (0.4)^n + 4.76 n - 12.34 \frac{u(n)}{1}$$

$y(0) \rightarrow \text{put } n=0$

$$y(0) = 0, \quad y(1) = 0 \dots$$

→ Substitute in $y(n)$ by $n=0, 1, 2, 3, 4, \dots$

[2] sec 4

$$* X_1(n) = 5\delta(n) - 2\delta(n-2)$$

$$X_2(n) = 3\delta(n-3)$$

$y(n)$ using a) Linear Convolution

b) inverse Convolution

$$y(n) = X_1(n) * X_2(n)$$

③ Sec 4